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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,229	07/25/2003	Robert C. McDonald	81980A	2445
23685	7590	10/20/2006		
KRIEGSMAN & KRIEGSMAN 30 TURNPIKE ROAD, SUITE 9 SOUTHBOROUGH, MA 01772			EXAMINER BELL, BRUCE F	
			ART UNIT	PAPER NUMBER

1746

DATE MAILED: 10/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/627,229

Applicant(s)

MCDONALD ET AL.

Examiner

Bruce F. Bell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 44-58 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 44-52 and 58 is/are rejected.
- 7) ☒ Claim(s) 53-57 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/25/03; 12/2/04; 7/24/06</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 44-49, 52 and 58 are rejected under 35 U.S.C. 102(b) as being anticipated by Ledjeff et al (5863672).

Ledjeff et al disclose a polymeric solid electrolyte in the form of a membrane which membrane is permeable to either cations or to anions. Ion conductivity is present in an aqueous environment for cation conductive polyethers, if the polymer is securely anchored, that is if the polymer is secured by chemical bonding, carbonic acid groups and or sulphonic acid groups. The membrane is further shown to have quaternary ammonium groups and pyridinium groups. Examples of cation conductive polymers are sulphonated polysulphones, polyether sulphones or polyether ketones.

Ledjeff et al anticipates the applicants instant invention as set forth above with respect to the instant claims. Ledjeff et al discloses a persulfonic acid membrane with a quaternary salt or pyridinium salt that is secured to the membrane (i.e. polymerized). It appears that Ledjeff et al introduces the cationic monomer into the entirety of the membrane and therefore, both the periphery and the interior regions of the membrane are introduced with the cationic monomer and therefore the dependent claims are anticipated.

Therefore, the prior art of Ledjeff et al anticipates the applicants instant invention.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 44-49, 52, 58 are rejected under 35 U.S.C. 102(b) as being anticipated by Sorenson et al (6011074).

Sorenson et al disclose an ion exchange membrane having a cation monomer of an organic quaternary salt. When the cations in such polymer are subsequently exchanged with hydrogen or metal ions which typically are smaller size than that of the organic quaternary cations, a relatively stable morphology of the polymers results in a polymer microstructure having significantly different pore characteristics than a polymer microstructure of the same ion exchange polymer which has not been prepared utilizing the cationic quaternary salt. See col. 3, lines 16-28. The pore characteristics of the ion exchange polymer having the organic quaternary salt have enhanced ability to uptake water or other polar fluids used to expand the polymer. See col. 3, lines 30-31. By appropriate selection of the alkyl, aryl, aralkyl or cyclo-alkyl groups present in the quaternary ammonium compound utilized to react with the starting ion exchange polymer, polymers having improved catalytic activity and membranes showing improved performance in electrolytic cells and fuel cells, as well as improved membranes useful in the separation of miscible liquids and gases is achieved. See col. 3, lines 43-50. The

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electrical resistivity of the polymer of the ion exchange polymer with quaternary ammonium salt is improved about 2 to 4 times greater than the electrical resistivity of the membrane without the salt. See col. 3, lines 56-60. When the polymer is utilized as a membrane in a chlor-alkali cell, the increased fluid uptake of the membrane results in the membrane having a relatively low resistivity, thereby improving the performance of the membrane. See col. 3, lines 61-65. See example 2 for the preparation of the perfluorosulphonic Acid polymer having the quaternary ammonium cations.). It appears that Sorenson et al introduces the cationic monomer into the entirety of the membrane and therefore, both the periphery and the interior regions of the membrane are introduced with the cationic monomer and therefore the dependent claims are anticipated.

The prior art of Sorenson et al anticipates the applicants instant invention as shown by way of the disclosure to Sorenson et al above with respect to the instant claims as presented.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 50 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sorenson et al (6011074) or Ledjeff et al (5863672).

Both Sorenson et al and Ledjeff et al are disclosed above in the 35 USC 102 rejections above.

Sorenson et al and Ledjeff et al do not disclose heating or irradiating to effect polymerization.

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the instant invention is made because both irradiating and heating are conventional means of effecting polymerization and both methods are known to one having ordinary skill in the art. As shown in both Sorenson et al and Ledjeff et al, the reaction of the component effects the polymerization and that is due to the heat of the reaction which allows the polymers to polymerization. Irradiation does the same thing, it effectively raises the temperature to cause the polymers temperature to rise and effect the polymerization. Therefore, the prior art of Sorenson et al or Ledjeff et al along with common knowledge in the art render the applicants instant invention obvious for the reasons set forth above.

Allowable Subject Matter

7. Claims 53-57 are allowable over the prior art of record.
8. Claims 53-57 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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9. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to teach and/or suggest the quaternary salt monomer of the formulas presented in the instant claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bruce F. Bell whose telephone number is 571-272-1296. The examiner can normally be reached on Monday-Friday 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BFB
October 16, 2006


Bruce F. Bell
Primary Examiner
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